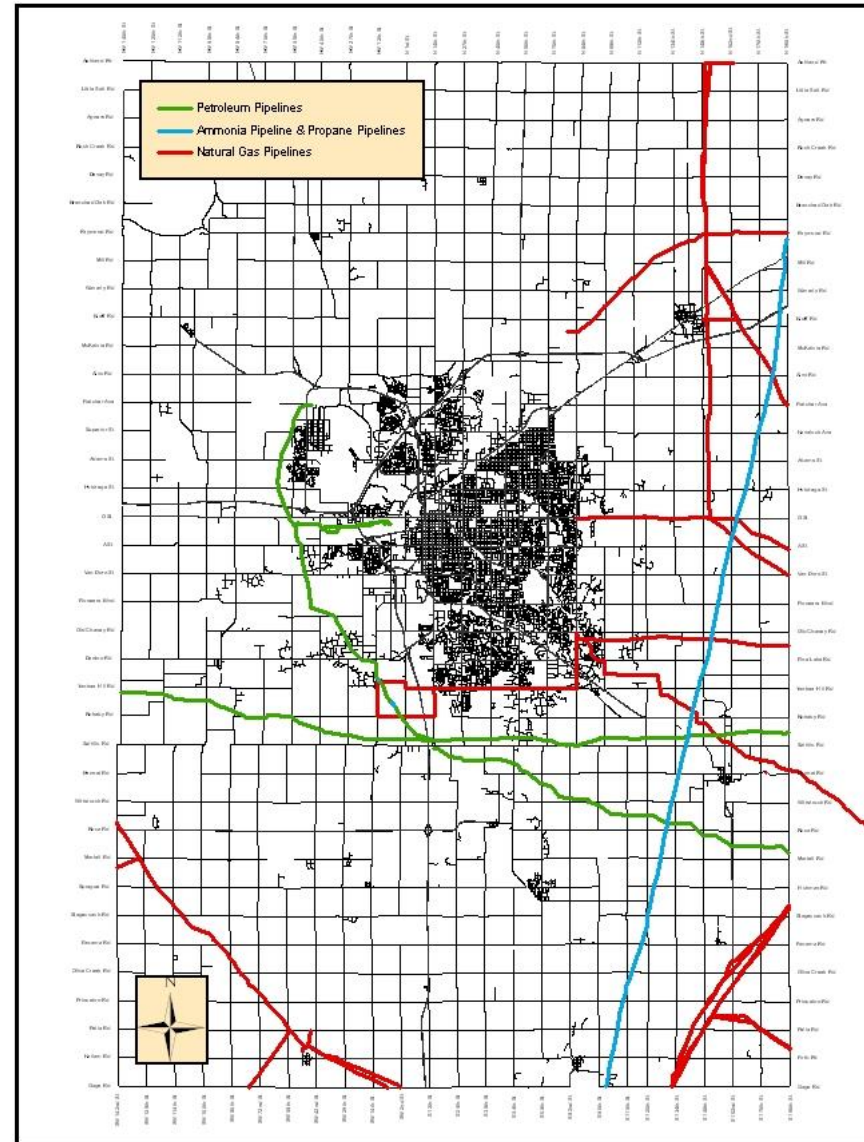


Pipelines in Land-use Planning

Planning Commission Briefing – December 2, 2015

Chris Schroeder
Lincoln-Lancaster County Health Dept.

Lancaster County Pipelines



Products Transported by Pipeline

- Natural Gas
- Anhydrous Ammonia
- Petroleum
- Propane
- Butane, Isobutane, Natural Gasoline – mixed product line

Natural Gas

- Explosion
- Flammable - Fires
- Pipeline planning area – federal equation using the diameter and operating pressure of the pipeline
- Worked closely with pipeline companies - data

Anhydrous Ammonia

- Airborne toxic, permanent lung damage, death, burning of the eyes, nose, and throat
- Flammable – Fires
- Pipeline Planning Area – United States Department of Transportation (US DOT) Emergency Response Guidebook – 500 feet to protect public and safety

Petroleum

- Gasoline, Diesel fuel
- Flammable – Fires
- Pipeline Planning Area – US DOT Emergency Response Guidebook – 150 feet to protect public health and safety

Propane

- Explosions
- Flammable –fires
- Pipeline Planning Area – US DOT Emergency Response Guidebook
– 330 feet to protect public health and safety

Mixed Product

- Explosions
- Flammable –fires
- Pipeline Planning Area – US DOT Emergency Response Guidebook
– 330 feet to protect public health and safety

History of Pipelines in Land-use

- Early 2000s – Recommended no commercial or residential structures within hazard area (pipeline planning area)
- Recommendations were noted in Planning's staff report and pipelines shown on development site plans
- Mixed success with this approach

History cont.

- April 2005 – Joint Board of Health and Planning Commission committee assembled
- Examined several public health and safety land-use issues – Pipelines, Hazardous materials, and , Active Living by Design.
- June 2006 – final report approved by the Board of Health and Planning Commission– pipelines risk to public health and safety – avoid hazard areas and encouraged creative site design

History cont.

- November 2010 – Pipelines and Informed Planning Alliance (PIPA) – formed by the US DOT Pipeline and Hazardous Materials Safety Administration (PHMSA) – Reduce the risk of pipelines through sound land-use practices. Final report contained recommended practices to help reduce risk near pipelines.
- February 2013 – Planning Commission briefing on Public Health and Land-use Planning which included pipelines
- October 2014 – met with development community to review potential PPA approaches

Pipeline Incident Risk

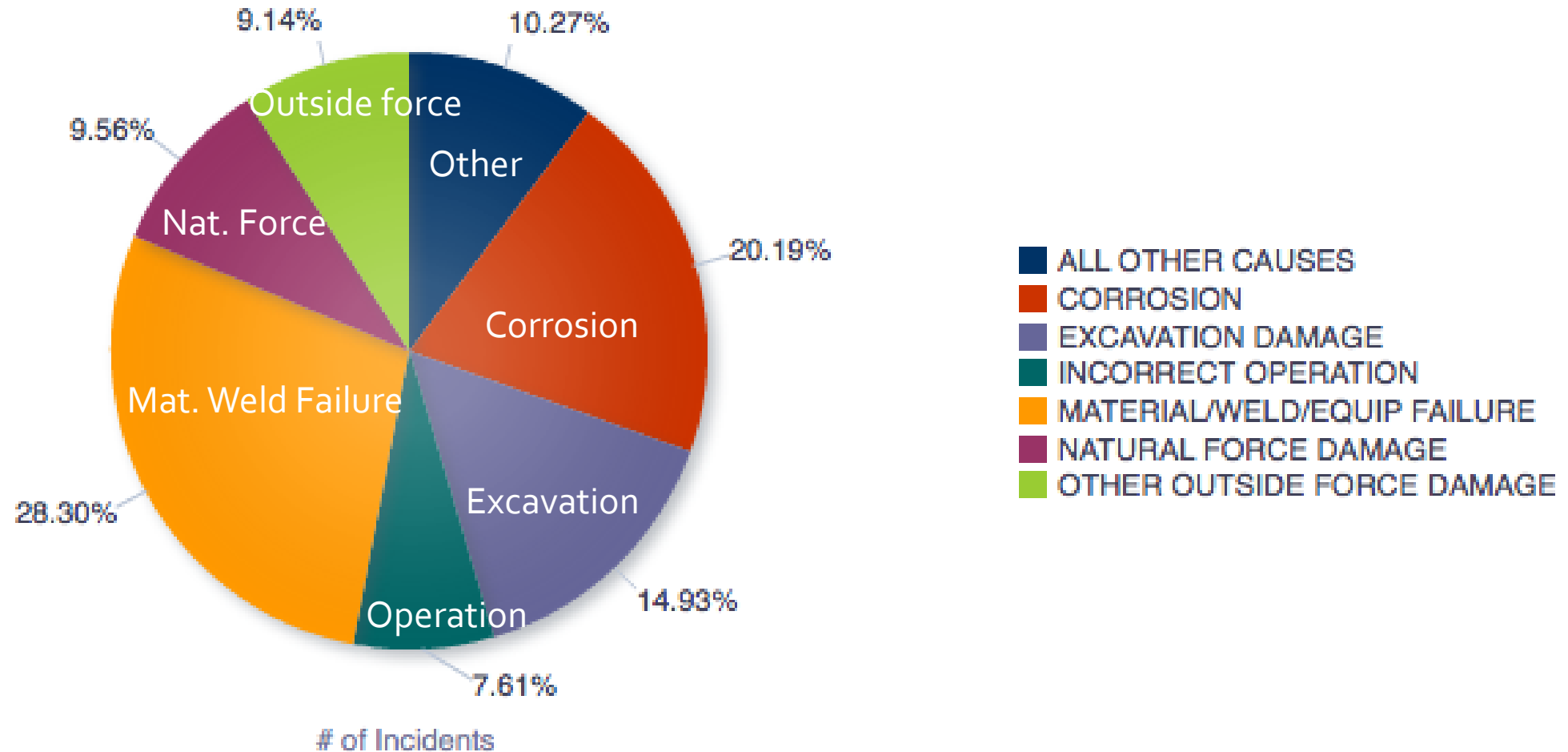
- Combination of probability and consequence
- Pipeline incidents – low probability, high consequence events

Pipeline Incident Probability

- Safest mode for transporting hazardous materials
- Pipeline incidents still occur for a variety of reasons

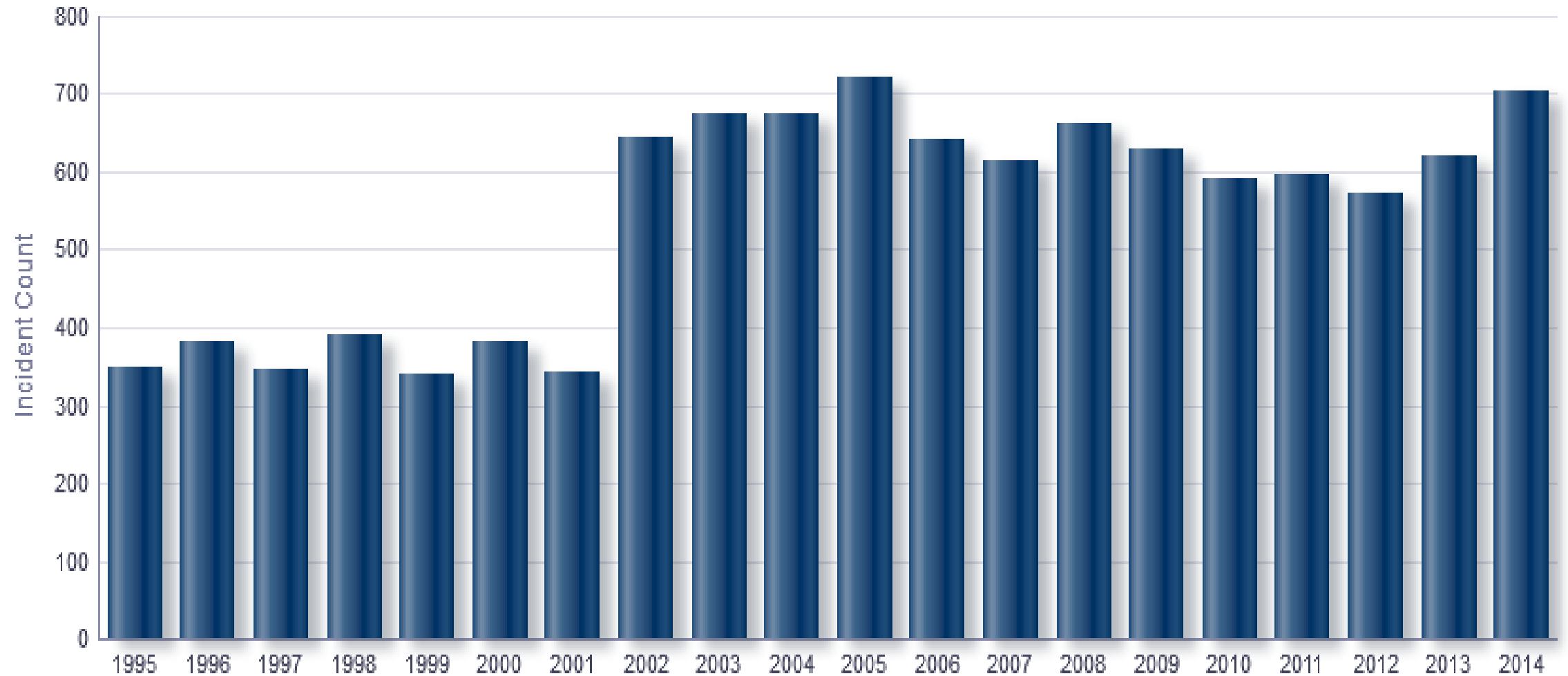
Significant Incident Cause Breakdown 10 Year Average (2005-2014)

System Type: ALL State: ALL



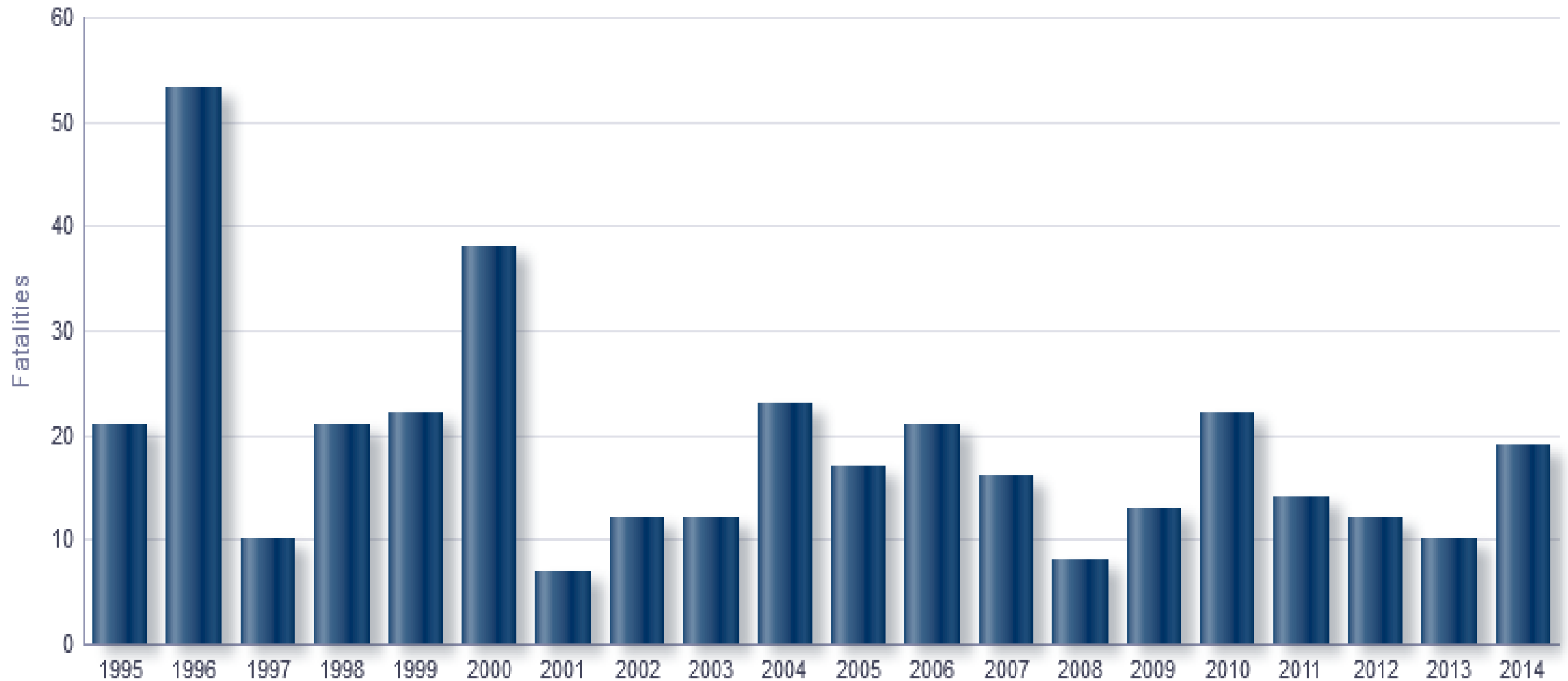
PHMSA data, the majority of significant incidents in the past 10 years have been caused by three things within the operator's control: corrosion, incorrect operation and material/weld/equipment failure.

PHMSA Pipeline Incidents: Count (1995-2014)
Incident Type: All Reported System Type: ALL State: ALL



Data from PHMSA – 5 year average is 615 pipeline incidents per year

PHMSA Pipeline Incidents: Fatalities (1995-2014)
Incident Type: All Reported System Type: ALL State: ALL



Data from PHMSA - 5 years average is 15 fatalities per year

Pipeline Incident Consequences

- Resurgence in development Yankee Hill and 84th Street – focus on natural gas pipelines
- Calculate pipeline planning area (formerly hazard area) using federal equation – pressure and diameter of pipeline
- Pipeline planning area – significant threat to human life and property damage

Natural Gas Pipelines

- Pipeline planning area can be the explosion or blast area
- Outside of pipeline planning area – further effects from thermal damage – fires
- Gas Research Institute
- Transmission vs. Distribution pipelines – relates to the strength of the pipe and the operating pressure
- High Consequence Area - contain 20 or more structures for human occupancy, retirement facilities, schools, or hospitals – limited mobility/ hard to evacuate



San Bruno, California September 9, 2010 – PG&E Natural Gas Pipeline Explosion/Fire
7 people killed; ~ 50 people injured; 37 homes destroyed

Fremont, NE
March 2014



Residents allowed to return to homes after backhoe ruptures gas line

[Print](#)[Email](#)

November 10, 2015 9:43 am • By RILEY JOHNSON | LINCOLN JOURNAL STAR

Loading...

Hazardous material crews evacuated two homes near 50th Street and Alvo Road Tuesday morning after a private contractor hit a natural gas supply line, Lincoln fire officials said.

The leak was reported at 8 a.m., and it took workers about **2.5 hours** to get the gas to the area shut off, but no one was hurt, said acting Lincoln Fire and Rescue Battalion Chief Troy Hurd.

Evacuated residents were allowed to return to their homes a short time later, Hurd said.

The contractor was installing new utility lines in the area when a backhoe hit the high-pressure, 6-inch plastic line that supplies the developing area with natural gas, he said.



[Enlarge Photo](#)

Waverly man in critical condition after fight with brother

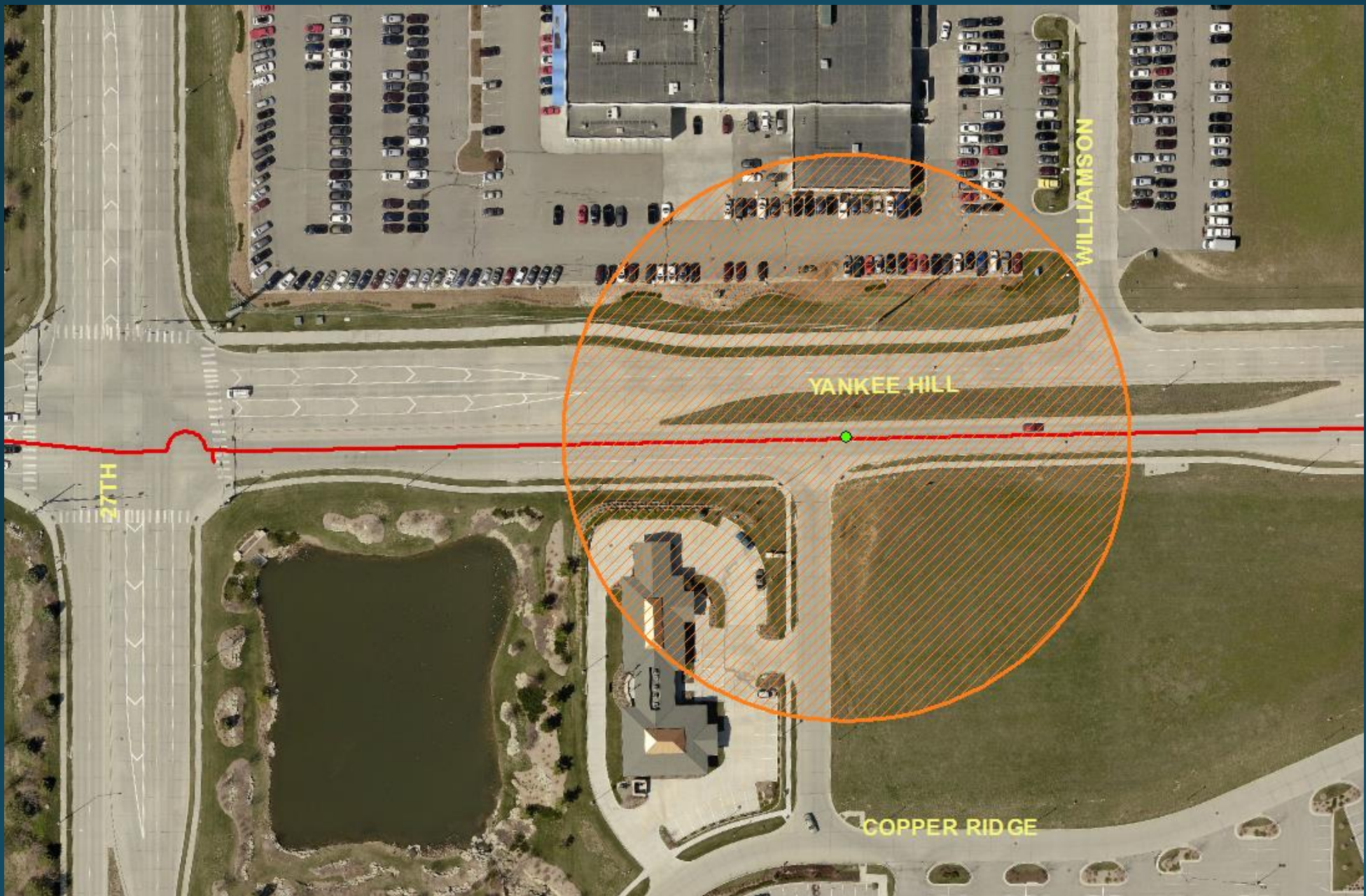
A 29-year-old

Land-use Planning Recommendations

- Initially recommended against locating commercial and residential structures within pipeline planning areas
- Recommendations have evolved to focus on uses with vulnerable populations – do not support locating residential dwellings, childcare facilities, retirement facilities, schools, and hospitals in pipeline planning areas
- May not be alert to see, smell, or hear (nighttime hours) pipeline incident – vulnerable populations need more time to evacuate – when pipeline leak is detected. May have limited staff to assist with evacuation.

Land-use Planning Recommendations

- Uses supported within pipeline planning areas – residential garages, storage, commercial uses, industrial uses, driveways, parking lots, roads.
- Commercial/ Industrial Uses – adults present typically during day with own transportation, awake and alert to see, hear, or smell pipeline leak, evacuate quickly during pipeline incident



Mitigate Risk

- Notification – inform and educate consumer regarding delineated pipeline planning areas
- Placing note on development plans, deed restrictions
- Placing signage on platted lots
- Have not identified effective strategy or approach

Current Approach

- Work closely with Planning Department Staff and developers on a case by case basis to address pipeline planning areas
- Where appropriate, utilize current operating pressure versus maximum allowable operating pressure to calculate pipeline planning area for natural gas pipelines
- Encourage alternative site design to locate supported uses within pipeline planning areas

Questions?